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EXAMINER	
WATTS, JENNA A	

ART UNIT	PAPER NUMBER
1781	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/575,973	SHIRADE, TESUYA	
	Examiner	Art Unit	
	JENNA A. WATTS	1781	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 July 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1,3,5,9,11,13,15,20 and 21* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1,3,5,9,11,13,15,20 and 21* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☒ The drawing(s) filed on *14 April 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Amended Claims 1, 3, 5, 9, 11, 13, 15 and 20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Regarding amended Claim 1, the amendment of the microbubbles having a diameter of "50 mm or less" is not supported by the originally specification or previously filed claims, as the specification states the bubbles have a diameter of 50 micrometers or less (Paragraph 10). Regarding amended Claim 1, as previously indicated, the amended method step of "pestling the raw materials of the fish-paste product after the step of adding the ozone gas-containing microbubbles" does not appear to be supported in the originally filed specification as a separate method step from the stimulation step, in light of originally filed Claim 9 and amended Claim 9 where it is claimed that the "first stimulation comprises rubbing together raw materials at the step of pestling of the raw materials." Furthermore, the previously added limitation in Claim 1 of "coating interfaces…**during the step of pestling**" also appears to constitute new matter because there does not

appear to be support in the specification for the coating step to occur during the step of pestling, because the step of pestling, that is, the first stimulation, is supposed to rupture the coating shells of the microbubbles. Also, Applicant has not provided support in the specification for the previously amended limitation of "coating interfaces...during the step of pestling" in Claim 1.

3. Furthermore, according to Claim 1, the step of the pestling after adding the ozone-gas containing microbubbles but before the coating step is not supported in light of the fact that the stimulation step is supposed to rupture the coatings and in Claim 1 the coatings are formed following the pestling step. The specification is clear in Paragraphs 8, 15-18 and 23 that the stimulation is by pestling to rupture the coatings already formed. Furthermore, regarding amended Claim 1, the added limitation of the second stimulation while processing and packaging the fish-paste product does not appear to be supported in light of Applicant's specification where the secondary stimulation appears to occur after packaging (see Paragraphs 32 and 33 and Example 5) or alternatively could occur after processing followed by packaging, but not during the processing step (Paragraph 35). In addition, the amendment of Claim 1 of "wherein the further formation of the active oxygen and free radical species kill germs contaminated to the raw materials in the producing process of the fish-paste product" does not appear to be supported in light of Paragraphs 32 and 33 of Applicant's specification, because, firstly, the second stimulation is supposed to be performed on a processed and packaged fish-paste product that would not constitute raw materials anymore, and secondly, there is no support in the specification for the second stimulation occurring

during processing of the fish-paste product. This is a new matter rejection and Applicant is encouraged to point out where support can be found for the above mentioned limitations.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1, 3, 5, 9, 11, 13, 15 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. Regarding amended Claims 1 and 9 in particular, as mentioned in the above new matter rejection, it is still unclear how the amended pestling limitation can be separate from the first stimulation limitation and this is unclear in light of Claim 9 which equates the stimulation to the rubbing of the raw materials during the pestling step. Furthermore, according to Claim 1, the step of the pestling after adding the ozone-gas containing microbubbles but before the coating step and the step of coating the microbubbles with protein and lipid during the step of pestling does not make sense because the stimulation step is supposed to rupture the coatings and in Claim 1 the coatings are formed following the pestling step and during the pestling step. Therefore, the amendment to Claim 1 is still unclear and indefinite. Regarding amended Claim 1, it is also unclear how after processing and packaging, raw materials are still being referred to and the phrase "wherein the further formation of active oxygen and free radical species kill germs contaminated to the raw materials in the producing process" does not make sense for a variety of reasons, but also because the second stimulation is

supposed to be performed on a processed and packaged fish-paste product that would not constitute raw materials anymore. Clarification is again requested.

7. Regarding Claim 1 and the claimed limitations of "giving a first stimulation to a part of the ozone gas-containing microbubbles thereby rupturing coating shells" and "giving a second stimulation to another part of the ozone gas-containing microbubbles" are unclear because it is unclear how such stimulation could be restricted to only parts of the microbubbles and how this would even be ascertained. Similarly, in new Claim 21, for the same reason it is unclear how the rupturing of the coating shells can be restricted to a portion of the microbubbles in the raw materials and after processing and packaging, and how such a step would be ascertained. In neither case does Applicant's specification provide any guidance on this issue, and therefore, the metes and bounds of these limitations for search and examination purposes are unclear.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. Claims 1, 3, 5, 9, 11, 15, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hoashi et al. (Japanese Publication No. 56-121462) in view of Garlick (U.S. Patent No. 6,537,494), further in view of Swart et al. (U.S.P.A. 2002/0192340), and as evidenced by Merriam- Webster's Online Dictionary, all previously made of record.

11. Regarding Claims 1, 3, 5 and 9, Hoachi teaches a method for sterilizing and producing a fish-paste product (see of JP 56-121462) by agitating and processing fish materials in the presence of ozone air (Page 1, lower left column of Foreign Publication JP 56-121462). Thus, it is understood that the ozone and raw materials of the fish-paste product are in contact with each other during the processing of the fish paste. Hoachi teaches that the ozone gas is fed through an ozonizer into a hermetically sealed agitator that contains the raw materials of a fish-paste product, the agitator containing a blade that agitates and grinds the raw materials into a fish-paste product in the presence of the ozone (see Page 1, Claim 1, Page 3, upper left column and Page 3, Figure 1 of Foreign Publication JP 56-121462), thus the ozone gas can be seen to be stimulated by the movement of the blade and raw materials of the fish paste product.

12. Regarding Claim 1, Hoachi teaches that the stimulation comprises blending, mincing and processing of the fish meat into a paste food in the presence of ozone inside the agitator with the blade (see Hoachi, English abstract of JP 56-121462). Thus,

the raw materials would be rubbing together due to the agitating action of the blade inside the agitator containing the ozone gas. According to Merriam- Webster's Online Dictionary, pestling can be defined as to beat, pound or pulverize and is deemed synonymous with the actions taught by Hoachi because both result in the production of a fish paste product. Thus, Hoachi is deemed to meet the claim limitations of pestling the raw materials after the step of adding the ozone gas since the grinding/pestling of the fish paste is done in the presence of the ozone.

13. Hoachi may not specifically refer to the materials of the fish-paste product as raw, but teaches the processing and production of boiled fish paste, fried fish balls, etc.(see English Abstract of JP 56-121462) that are all cooked products, thus it is understood that prior to processing the materials of the fish-paste product are raw. The raw materials or tissues are deemed to include protein and lipid contained in the fish-paste products because Hoachi teaches that the fish paste can be made up of fillets or other fish meat (see Hoachi, Page 1, lower right column of Foreign Publication JP 56-121462), which would be reasonably expected to contain both protein and lipids. Furthermore, Applicant discloses that tissues in raw materials of the fish-paste product refer mainly to protein and lipid (See instant application, Page 6, lines 1-2).

14. Regarding amended Claims 1, 3, 5 and 9, Hoachi does not teach the addition of ozone gas-containing microbubbles having a diameter of 50 mm or less (should be 50 microns or less) generated in water to the raw materials of the fish paste, and further does not teach the coating of interfaces of the bubbles with tissues composed of raw materials during the step of pestling, thereby creating coating shells composed of said

protein and lipid to maintain the ozone gas-containing microbubbles for 2 to 50 hours, and giving a first stimulation to a part of the ozone gas-containing microbubbles thereby rupturing coating shells of the ozone gas-containing microbubbles while said ozone gas-containing microbubbles are in the raw materials, thereby sterilizing the raw materials by the formation of active oxygen and free-radical species.

15. Garlick teaches ozone as a broad-spectrum sterilizing agent and teaches a method of providing a sterilizing fog characterized by droplet size range and its use in sterilizing food having irregular surfaces such as muscle tissue (Column 1, lines 8-10, 32-40 and Column 3, lines 60-65). Garlick teaches that in a gaseous form, most sterilizing agents are rather hazardous and difficult to control exposure time and ozone decays in a gaseous form far too quickly to be useful in food processing. Garlick teaches that water is the preferred media for transporting ozone and other sterilizing agents to a contaminated site for oxidative anti-microbial activity (Column 1, lines 45-50). Garlick further teaches foods can be immersed in a liquid bath but can also be sprayed onto a food and teaches that spray systems do not provide a uniform coverage of the product and can utilize large amount of water, accordingly, spray systems employing larger droplets of water containing ozone, have not been effective because of a droplet size that is too large to effect surface penetration of irregularities (Column 1, lines 53-56 and 60-65).

16. Garlick teaches that a further issue is that spray systems having large droplets are unable to penetrate micro-cavities on irregular surfaces of food products, such as meats, and water surface tension prevents the large drops and liquid bath from

penetrating these regions and the bacteria present in micro-cavities remains undisturbed (Column 2, lines 5-10). Garlick solves the above prior art problems by using an ozone fog/spray/mist, wherein the fog is characterized by droplets having an average diameter of from about 0.0005 mm to about 0.05 mm, and where preferably the sterilant fog is an ozone fog (Column 2, lines 20-25 and 55-58), where 0.05 mm equals 50 micrometers. Therefore, since Garlick teaches that the average diameter of the particles is at the greatest 50 micrometers or less than 50 micrometers, it would be reasonably expected that a portion of the particles have a diameter of 50 micrometers or less, which is the size disclosed in Applicant's specification for the diameter of the microbubbles (see previous Claim 1). Garlick teaches a method of providing a more useful ozone fog that is able to access irregular surfaces of food products, due to its very small droplet size coupled with a high ozone concentration in water (Column 3, lines 60-64). Garlick teaches a slowed fall rate of the smaller droplet sized particles, allowing a longer contact time with the surface and can more easily fill micro-cavities of the irregular surface of the foods (Column 4, lines 13-15). Garlick teaches that the highly ozonated water is used to either feed an immersion tank for direct contact with food products or to create the inventive fog in a vapor cell (Column 4, lines 33-35).

17. Therefore, Garlick's teaching of ozonated water used to create an ozone fog having the disclosed diameter of the ozone particles is deemed to read on adding water containing the ozone gas-containing bubbles and since Garlick teaches the claimed diameter of the ozone bubbles, Garlick is deemed to teach ozone gas-containing microbubbles. Since Garlick teaches that ozone gas is injected into a water stream and

teaches that the resulting fog comprises droplet sizes having an average diameter of at the most 50 micrometers or less, it would be expected that a portion of the droplets would have a diameter of 50 micrometers, and therefore, both the ozone gas bubbles and the water forming the fog would have the same diameter of droplets as the fog. Furthermore, Garlick's teaching of a fog comprising the claimed droplet size of ozone is deemed to read on spraying a mist of the water containing the ozone gas-containing microbubbles. Garlick teaches that high frequency high power sound waves cause the undissolved gas bubbles to rupture (Column 4, lines 25-28) and teaches that the inventive fog is generated in a vapor cell which comprises an orifice to allow release of the inventive ozone fog where the orifice opens up to a contact chamber where the product to be disinfected or sterilized is located (Column 4, lines 33-35 and 45-55 and Column 5, lines 10-11).

18. Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made, for the method of sterilizing fish paste, as taught by Hoashi, to have included adding water containing microbubbles of ozone having the disclosed diameter and in the form of a mist or fog, because Garlick teaches that foodstuffs having irregular surfaces, such as muscle tissue, can be more effectively sterilized using water containing microbubbles of ozone than gas-containing ozone, because the ozone microbubbles in water are better able to penetrate to the micro-cavities of the food, thereby sterilizing any bacteria present, as compared to larger ozone bubbles or ozone in gas form. One of ordinary skill in the art would have been motivated to add water containing microbubbles of ozone and in the form of a mist or

fog to the sterilizing method of Hoashi in order to quickly and effectively insure the sterilization of a food, such as fish paste, so that it is safe for the consuming public.

19. Therefore, since Hoashi in view of Garlick teach adding the ozone gas containing microbubbles having the disclosed diameter in the form of a mist or fog to the raw materials of the fish paste product and further teaches that the smaller ozone droplet size enables the more enhanced penetration of micro-cavities present in the food product, one of ordinary skill in the art would have reasonably expected that the ozone gas-containing microbubbles of Hoashi in view of Garlick would be penetrating the solid foodstuff, and therefore coating interfaces of the ozone-gas containing microbubbles with protein and lipid during the step of pestling thereby creating coating shells composed of said protein and lipid to maintain the ozone gas-containing microbubbles for 2 to 50 hours, in view of the fact that Applicant discloses that it is the diameter of the microbubbles that allow the coating shells to form in the raw materials of the fish paste product, and wherein the first stimulation taught by Hoashi would thereby rupture the coating and result in the claimed method steps, because since Hoashi in view of Garlick teaches the claimed ozone composition and its method of delivery as well as the pestling stimulation step, such an ozone composition will react or co-act in the same manner as claimed by Applicant, and therefore, the properties of these components will necessarily be present because a component and its properties are inseparable. *In re Papesch*, 137 USPQ 43 (CCPA 1963).

20. Similarly, since Applicant discloses that ozone gas present in the microbubbles is released into surrounding tissues of the fish-paste product and that this ozone gas is

rapidly converted by autolysis into oxygen and in this process, the ozone gas transiently forms active oxygen species and free radical species (see instant specification, page 7, Paragraph 2), it would be reasonably expected that in the method of Hoashi in view of Garlick, following the pestling stimulation step when the coating shells are ruptured and the ozone gas is released into the foodstuff and the foodstuff is sterilized, this would be due to the dissolution of the ozone gas into the foodstuff and the conversion of the ozone gas to the claimed active oxygen and free-radical species. Furthermore, since Hoashi in view of Garlick teach the claimed method steps, one of ordinary skill in the art would reasonably expect that the first stimulation would be given to a part of the ozone gas-containing microbubbles.

21. Regarding amended Claims 1 and 11, Hoashi in view of Garlick do not teach a second stimulation to another part of the ozone gas-containing microbubbles while processing and packaging the fish-paste product, thereby further sterilizing the fish-paste product by the further formation of active oxygen and free radical species, and where the second stimulation comprises high frequency irradiation of the fish-paste product and wherein the further formation of active oxygen and free radical species kill germs contaminated to the raw materials in the process of the fish-paste product and wherein the fish-paste product is germ free and has an effect of being sterilized.

22. Swart teaches a method for reducing a microbial burden on a food product that includes contacting a food product with an antimicrobial agent, such as ozone (Page 6, Paragraph 58), via spraying or immersion in the antimicrobial agent (and Page 17, Paragraph 176) and irradiating the food product (Page 1, Paragraph 2) using gamma

and x-rays (Page 1, Paragraph 6), which are known forms of high-frequency radiation. Swart teaches that the method is appropriate for fish products of various forms, including processed meats, formed products, minced products, etc. (Page 2, Paragraph 23). Swart teaches that in certain embodiments, contacting the food with an antimicrobial agent and irradiating produce a synergistic reduction in the microbial burden on the food product (Page 2, Paragraph 12). Swart further teaches that at the present time, irradiation of food product is the only commercially viable technology sufficiently effective at destroying harmful microbes or insects on or in raw or ready to eat product (Page 1, Paragraph 4). The radiation from the high frequency waves would be expected to generate the stimulation.

23. Swart teaches that when the treatment with the antimicrobial agent precedes irradiating, any of a variety of processing steps can be conducted between irradiating and treating with the antimicrobial agent (Page 7, Paragraph 66). Swart further teaches that the food product can be packaged before irradiating (Page 7, Paragraph 66). Therefore, since Swart teaches the stimulation, it follows that this would result in the rupturing of the coating shells of the ozone gas-containing microbubbles contained in the fish-paste products, thereby further sterilizing the fish-paste product by the further formation of active oxygen and free-radical species and providing the benefits as claimed by Applicant in amended Claim 1 of a germ free and sterilized product and further releasing formation of active oxygen and free radical species to kill germs.

24. Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made, for the method of sterilizing of a fish-paste product, as

taught by Hoashi in view of Garlick, to have further comprised giving a secondary stimulation to a part of the ozone gas-containing microbubbles after processing and packaging the fish-paste product, because Swart teaches that foods can be packaged prior to receiving high frequency irradiation, which is the only commercially viable technology sufficiently effective at destroying harmful microbes in raw products, and further teaches that there is a synergistic effect when used with an antimicrobial agent such as ozone. One of ordinary skill in the art would have been motivated to combine the technologies of ozone and high frequency irradiation, as taught by Swart, in order to effectively destroy harmful bacteria on packaged ready to eat products, such as packaged fish paste products, in order to create packaged products safe for consumption.

25. Furthermore, since Hoashi in view of Garlick and Swart teach the claimed method steps for the second stimulation, one of ordinary skill in the art would reasonably expect that the second stimulation would be given to another part of the ozone gas-containing microbubbles.

26. Regarding Claim 15, Hoashi in view of Garlick and Swart are taken as cited above in the rejection of Claim 1 and teach that the first stimulation comprises heating the raw materials containing the ozone gas-containing microbubbles because Hoashi teaches the preparation of boiled fish paste and fried fish balls following the ozone treatment (see Hoachi, English abstract of JP 56-121462). Boiling and frying are methods of heating, and thus stimulating, raw materials.

27. Regarding Claim 20, Hoashi in view of Garlick and Swart are taken as cited above in the rejection of Claim 1 and are deemed to teach the pestling but do not specifically teach a time of pestling or a relative speed of a pestle to a mortar. It is noted that mortar and pestles are conventional modes of grinding components, and it is again submitted that the agitation/blending/mincing taught by Hoashi in view of Garlick and Swart provide an equivalent mechanism for carrying out the claimed invention. Furthermore, Hoashi in view of Garlick and Swart teach that the stimulation comprises blending, mincing and processing of the fish meat into a paste food in the presence of ozone inside the agitator with the blade (see Hoachi, English abstract of JP 56-121462), therefore, it would have been within the skill of one of ordinary skill in the art to pestle or blend the ingredients of the fish paste for a suitable time and speed in order to provide for a fish paste product that has the desired texture and consistency, and in keeping with economical modes of food production.

28. Regarding new Claim 21, Hoachi in view of Garlick and Swart are taken as cited above in the rejection of Claim 1 and are deemed to teach the claimed method and method steps of adding ozone-gas containing microbubbles generated in water to raw materials of the fish-paste product, the coating step to create coating shells of protein and lipid, and two stimulation steps, wherein the first stimulation step taught by Hoachi in the form of physical stimulation to rupture the coating shells of a portion of the ozone gas-containing microbubbles, thereby sterilizing the raw materials and a second stimulation step taught by Swart to rupture the coating shells of another portion of the ozone gas-containing microbubbles after processing and packaging the fish paste

product to form further active oxygen and free radical species thereby sterilizing the fish paste product (see rejection of Claim 1 above and the teachings of Hoachi, Garlick and Swart).

29. **Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hoashi et al. (Japanese Publication No. 56-121462) in view of Garlick (U.S. Patent No. 6,537,494) and Swart et al. (U.S.P.A. 2002/0192340), all previously made of record, and further in view of Tran et al. (U.S. Patent Number 6,248,986).**

30. Hoashi in view of Garlick and Swart are relied upon as above in the rejection of Claim 1.

31. Hoashi in view of Garlick and Swart do not specifically teach wherein the second stimulation comprises microwave irradiation of the fish paste product.

32. Tran teaches a method of using non-ionizing electromagnetic radiation such as microwave radiation for use in destroying microorganisms in food packaging (Column 1, lines 10-15) and teaches that within the content of the food industry, heating with non-ionizing electromagnetic radiation, such as microwave radiation, makes it possible to sterilize packaging by destroying microorganisms on the packaging without causing significant heating of the packaging that would adversely alter the properties of the packaging, and also teaches heating with such radiation makes it possible to sterilize moist food prior to or after the food has been packaged (Column 2, lines 45-55). Tran further teaches that the parameters that define the radiation treatments can be selected

that suit the characteristics of the particular food products and packaging (Column 3, lines 1-10).

33. Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made, for the method of Hoashi in view of Garlick or Swart to have used microwave radiation as the second stimulation of the raw materials containing the ozone gas-containing microbubbles tentatively stabilized by the coating shells, because Tran teaches that microwave radiation can successfully be used in the context of the food industry to sterilize food products before or after packaging, wherein such radiation treatment does not adversely alter the properties of the packaging.

Response to Arguments

34. The 112 1st new matter rejection of the claims have been maintained for the most part for the reasons as set forth above.

35. The 112 2nd rejection of Claim 1 has been withdrawn in part, however, the issue relating to the pestling limitation being separate from the stimulation limitation is still unclear and has not been sufficiently addressed by Applicant. Therefore, the 112 2nd rejection of Claim 1 and dependent claims has been maintained for the reasons set forth above. The last two amendments to the claims have not clarified the issues set forth by the Examiner and Applicant is encouraged to consider the specification in terms of support for the amended limitations.

39. Applicant's arguments with respect to the pending claims have been considered but are moot in view of the new ground(s) of rejection using the same references as previously made of record.

40. Regarding Applicant's arguments relating to the 112 1st and 2nd rejections, the Examiner respectfully disagrees that Claim 1 as amended is fully supported by Applicant's specification. The Examiner maintains the position that the pestling step is synonymous with the first stimulation and the step of coating the microbubbles during the pestling step is not supported nor is the step of pestling before the coating step supported. In fact, in Applicant's arguments in Paragraph 20, the Applicant appears to be stating the same thing as what the Examiner is arguing, however, this is not reflected in the claims. Therefore, the 112 1st and 2nd rejections are maintained. Regarding the second stimulation occurring during processing and packaging, the Examiner respectfully disagrees that this limitation is also supported in Applicant's specification because Applicant's specification states that the sterilizing effect may be continued through processing and packaging, but the specific stimulation step occurs either after processing and packaging, or alternatively, after processing and before packaging, but not during processing (See Paragraph 32).

41. Regarding Applicant's arguments relating to the prior art rejections, the Examiner respectfully disagrees. As previously stated, Hoang teaches a first physical stimulation of ozone and the raw materials of the fish paste and Garlick provides clear motivation for the ozone to have been delivered in the form of a fog/mist comprising microbubbles of ozone having the claimed diameter. Therefore, since Hoang in view of Garlick teach

the claimed method of ozone gas containing microbubbles in water mixed with the raw materials of the fish paste, one of ordinary skill in the art would have reasonably expected that the coating step would occur due to the nature and action of the microbubbles disclosed by Garlick, where the smaller bubbles are able to access irregular surfaces of food products for increased penetration due to their small size (see disclosure of Garlick cited in the rejection of Claim 1 above) and in light of the fact that Applicant discloses that such coating occurs due to the nature of the action of the microbubbles of ozone. It is also noted that Applicant also does not specifically teach how such coating occurs, with the exception of stating that the action of the microbubbles due to their size allows such coating to occur. Therefore, the physical stimulation taught by Hoang would be reasonably expected to rupture the coatings, thereby allowing the sterilizing process of the ozone to occur.

42. Furthermore, regarding the reference of Swart, the Examiner respectfully disagrees that Swart does not connect the antimicrobial treatment with the stimulation of a packaging food product, as Swart clearly teaches first treating the food product with an antimicrobial agent such as ozone and then subjecting the packaged food product to a high frequency irradiation treatment and further teaches that in certain embodiments, contacting the food with an antimicrobial agent and irradiating produces a synergistic reduction in the microbial burden on the food product (Page 2, Paragraph 12), therefore providing clear motivation for the claimed process steps.

Conclusion

43. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JENNA A. WATTS whose telephone number is (571)270-7368. The examiner can normally be reached on Monday-Friday 9am-5:30pm.

44. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

45. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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